

REMARKS

Applicant has carefully reviewed and considered the Final Office Action mailed on June 30, 2005, and the references cited therewith.

Claims 1, 11, 24, and 25 are amended, no claims are canceled, and no claims are added; as a result, claims 1-27 are now pending in this application.

§102 Rejection of the Claims

Claims 11-13, 15, and 20-27 were rejected under 35 USC §102(b) as being anticipated by Billet (U.S. Patent No. 6,010,205).

The Examiner cited Col. 6, lines 27-42; Col. 9, lines 10-19 and 29-35; and Col 10, line 63 to Col. 11, line 21 as describing providing at least one under/overprinting map defining a predetermined total percentage of under/overprinted pixels, the map enabling the printing of relatively more pixels in at least some rows corresponding to the defective printing elements and relatively fewer pixels in at least some other rows corresponding to other printing elements”, as recited by Applicant’s independent claim 11.

The Billet reference appears to describe an interleaved or overlapping printing method. (See Abstract and Col. 1, lines 49-57). The interleaved or overlapping printing method detects malfunctioning nozzles and compensates for the malfunctioning nozzles by activating nozzles that would not normally be used during a given scan of the printhead. For example, in the 50% printing mode described by the Billet reference, at Col. 9, lines 29-35, in a printing mode wherein 384 nozzles are used (i.e., three printheads each having 128 nozzles) to print a given color, the nozzle number which is 192 nozzle locations from the improper functioning nozzle can be used to print both, the dots which it was intended to print, as well as the dots which should have been printed by the malfunctioning nozzle during a different scan over the band. Thus, the Billet reference appears to describe printing intended dots with functioning nozzles and printing dots that should have been printed with the same functioning nozzles.

The Billet reference does not describe providing at least one under/overprinting map defining a predetermined total percentage of under/overprinted pixels, the map enabling the printing of relatively more pixels in at least some rows corresponding to the defective printing elements and relatively

fewer pixels in at least some other rows corresponding to other printing elements, as recited by Applicant's independent claim 11.

Nor does the Billet reference describe under/overprinting using an under/overprinting map. As described by Applicant's specification, under/overprinting is a method of printing to achieve a uniform, high optical density, or darkness in the black regions. (See page 2, lines 5-15 of the Applicant's specification) (See also, e.g., U.S. Pat. No. 6,132,021 to Smith et al. assigned to the assignee of the present invention and incorporated into the Applicant's specification by reference in its entirety on page 2, lines 7-8). In addition, per MPEP §2106(II)(C) (when evaluating the scope of a claim, every limitation in the claim must be considered. Office personnel may not dissect a claimed invention into discrete elements and then evaluate the elements in isolation. Instead, the claim as a whole must be considered). The Applicant submits that the claim limitation reciting under/over printing was not considered in the Examiner's rejection of claim 11. The Applicant submits, for the reasons provided above, that the Examiner's citation of various portions of the Billet reference, which refer to an interleaving and overlapping mode of printing does not describe under/overprinting as described by Applicant's specification and recited in Applicant's independent claim 11.

In addition, the Applicant has amended independent claim 11 to more clearly recite patentable subject matter and not in view of the art cited by the Examiner. Applicant's independent claim 11, as amended, recites, besides other things:

printing the predetermined region with at least one additional printhead according to the corresponding one of the under/overprinting maps, wherein the predetermined region includes a region of uniform black color.

From a review of the Billet reference, the Applicant was unable to locate a description of printing the predetermined region with at least one additional printhead according to the corresponding one of the under/overprinting maps, wherein the predetermined region includes a region of uniform black color. That is, nowhere in the Billet reference is there a description of under/overprinting, as recited by Applicant's independent claim 11, and described by Applicant's specification, nor is there a description of printing a region of uniform black color using such under/overprinting.

As such, Applicant respectfully submits that each and every limitation of claim 11 is not shown in the Billet reference. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the §102 rejection of claim 11 as well as those claims that depend therefrom.

Independent claim 24, as amended, recites, besides other things:
means for mapping at least one of the defective printing elements to at least one corresponding defectively-printed pixel row in a uniformly black colored region of an image swath; and
means for under/overprinting with another printhead more pixel positions in at least one defectively-printed pixel row than in at least some other pixel rows so as to compensate for the defective printing element corresponding to the defectively-printed pixel row.

And, independent claim 25, recites:

a print mechanism responsive to control commands for printing drops of a black pigmented ink and at least one additional fluid from a plurality of printing elements onto specific pixel locations of pixel rows of a print medium to print an image;
at least one under/overprinting map for governing the printing of the drops of a corresponding at least one additional fluid, the map defining a relatively higher percentage of printable pixel locations in the pixel rows corresponding to defective ones of the printing elements and a relatively lower percentage of printable pixel locations in the pixel rows corresponding to functional ones of the printing elements; and
a print controller connected to the under/overprinting map and the print mechanism, the print controller adapted to receive image data for the region of uniform black color and generate control commands for printing drops of the at least one additional fluid as governed by the under/overprinting map.

For the reasons provided above in connection with independent claim 11, Applicant respectfully submits that the Billet reference does not describe each and every limitation of Applicant's independent claims 24 and 25. That is, nowhere in the Billet is reference there a description of under/overprinting nor is there a description of printing a region of uniform black color using such under/overprinting.

As such, Applicant respectfully submits that each and every limitation of claim 11 is not shown in the Billet reference. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the §102 rejection of claims 24 and 25 as well as those claims that depend therefrom.

§103 Rejection of the Claims

Claims 1-4 and 7-10 were rejected under 35 USC §103(a) as being unpatentable over Marler, et al. (U.S. Patent No. 5,975,677) in view of Neese, et al. (U.S. Patent No. 6,302,511).

The Examiner cited Col. 7, lines 17-60, Col. 10, lines 39-59, and Col. 11, lines 16-29, of the Neese et al. reference as describing printing individual pixels having at least one of the additional printheads such that a higher percentage of pixels in the rows corresponding to the defective elements are printed relative to the percentage of pixels printed in the rows corresponding to the functional elements, as recited by Applicant's independent claim 1. The Neese et al. reference appears to teach that when a jet of a jet group is determined to be non-functional, the responsibility of compensating for the non-functional jet is allocated among the remaining functional jets. In this way, a complete raster line having dots unaccounted for, may still be produced by that jet group (See Figure 6, and Col. 7, lines 55-60 of the Neese et al. reference). In other words, according to the Neese et al. reference, a complete raster line can be printed by substituting defective nozzles from one jet mask with functional nozzles of a number of other jet masks. The Neese reference does not appear to describe under/overprinting using an over/underprinting map as recited by Applicant's independent claim 1, as amended, and described by Applicant's specification at page 2, lines 5-15.

The Marler, et al. reference appears to teach calculating the relative alignment between the first and second arrays of ink ejection elements such that droplets of the first ink can be effectively aligned with droplets of the second ink.

Neither the Marler, et al. nor the Neece et al. references, either alone or in combination, appear to teach or suggest printing individual pixels using an under/overprinting map defining a predetermined total percentage of under/overprinted pixels, the map enabling at least one of the additional printheads such that a higher percentage of pixels in the rows corresponding to the defective elements are printed relative to the percentage of pixels printed in the rows corresponding to the functional elements, as recited by Applicant's independent claim 1, as amended.

As such, each and every element and limitation is not provided in the references, either independently or in combination, to support a §103 rejection of

claim 1. Accordingly, Applicant respectfully requests the reconsideration and withdrawal of the rejection of claim 1, as well as those claims that depend therefrom.

Claims 5 and 6 were rejected under 35 USC §103(a) as being unpatentable over Marler, et al. (U.S. Patent No. 5,975,677) and Neese, et al. (U.S. Patent No. 6,302,511) as applied to claim 1 above, and further in view of Sato, et al. (U.S. Patent No. 5,933,164). Claims 5 and 6 depend from independent claim 1. Applicant believes independent claim 1 to be allowable over the Marler et al. and Neese et al. references. The Sato reference fails to cure the deficiencies of the Marler and Neese references. Accordingly, Applicant respectfully requests withdrawal of the §103 rejection of dependent claims 5 and 6.

Claim 14 was rejected under 35 USC §103(a) as being unpatentable over Billet (U.S. Patent No. 6,010,205) as applied to claim 11 above, and further in view of Hickman (U.S. Patent No. 4,963,882).

Claim 14 depends from independent claim 11. Applicant believes independent claim 11, as amended, to be allowable over the Billet reference. The Hinkman reference does not cure the deficiencies of the Billet reference. Accordingly, Applicant respectfully requests withdrawal of the §103 rejection of dependent claim 14.

Claims 16, 18, and 19 were rejected under 35 USC §103(a) as being unpatentable over Billet (U.S. Patent No. 6,010,205) as applied to claim 15 above, and further in view of Sato, et al. (U.S. Patent No. 5,933,164).

Claims 16, 18, and 19 depend indirectly from independent claim 11. Applicant believes independent claim 11, as amended, to be allowable over the Billet reference. The Sato reference does not cure the deficiencies of the Billet reference. Accordingly, Applicant respectfully requests withdrawal of the §103 rejection of dependent claims 16, 18, and 19.

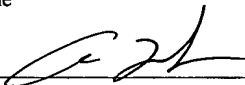
Claim 17 was rejected under 35 USC §103(a) as being unpatentable over Billet (U.S. Patent No. 6,010,205) and Sato, et al. (U.S. Patent No. 5,933,164) as applied to claim 16 above, and further in view of Suzuki (U.S. Patent No. 6,238,047). Claim 17 depends indirectly from independent claim 11. Applicant believes independent claim 11, as amended, to be allowable over the Billet reference. The Sato reference does not cure the deficiencies of the Billet reference, even in combination with the Suzuki reference. Accordingly, Applicant respectfully requests withdrawal of the §103 rejection of dependent claim 17.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney Larry D. Baker at (360) 212-0769.

At any time during the pendency of this application, please charge any additional fees or credit overpayment to the Deposit Account No. 08-2025.

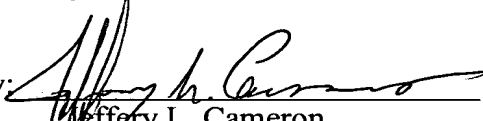
CERTIFICATE UNDER 37 CFR §1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS AF Commissioner for Patents, P.O. BOX 1450 Alexandria, VA 22313-1450, on this 29th day of August, 2005.

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